APPENDIX E - RIPARIAN SPECIES: ECOLOGICAL FUNCTIONS, RESPONSES TO FIRE, AND MANAGEMENT CONSIDERATIONS

TABLE 1. RIPARIAN SPECIES

Species	Ecological Function	Fire and Management
Riparian Tree Species		
Black Cottonwood (*Populus angustifolia*)	Forms small stands along small, moderately steep-gradient streams rather than extensive gallery forests. Important wildlife habitat; provides shade, bank protection, and erosion buffering.	Sprouts from roots and root crown, and/or healthy/fire-damaged branches after fire. Heavy use and recreation can reduce juvenile recruitment, which apparently requires flooding to expose suitable colonizing substrate.
Quaking Aspen (*P. tremuloides*)	Important wildlife habitat. Of limited distribution in the planning area forming in areas of subsurface moisture. Some stands along perennial stream channels provide important bank stability and shading functions.	Sprouts readily from roots and underground stems. Crown fires in coniferous forests often drop to the surface in aspen, or may extinguish after burning into aspen. Highly competitive on burned sites even if barely detectable before fire; it often dominates after fire. Heavy browsing of young suckers combined with trampling and soil compaction can reduce the ability to vegetatively reproduce.
Black Cottonwood (*P. trichocarpus*)	Main gallery forest species along main rivers. Provides important habitat for wildlife, attractive recreation sites, and erosion buffering from adjacent upland activities. This species is characteristic of floodplains.	Sprouts from stumps, boles, root crowns, or lateral roots following fire. However, it is frequently damaged by fire. Young trees and seedlings are usually killed by fire regardless of severity. Severe fire kills or top-kills older trees. Heavy use and recreation can reduce juvenile recruitment. Flooding and deposition are important to maintaining stands.
Rocky Mountain Juniper (*Juniperus scopulorum*)	The Rocky Mountain juniper/red-osier dogwood habitat type forms either a narrow band along streams of V-shaped canyons, or relatively broad stands on older alluvial terraces of floodplains of major streams or rivers.	Fire potential is relatively low in this habitat type. However, young juniper trees are easily killed by fire. As juniper trees age, they are able to withstand moderate fires, but a hot fire or a crown fire can kill or severely damage a tree. Old, large trees often show evidence of surviving a number of fires.

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Riparian Shrub Species		
Thinleaf Alder (*Alnus incana*)	Generally found on narrow, relatively steep riparian areas in the planning area. Provides bank stability, shade, and wildlife habitat. Streams lined with this species develop deep narrow channels with excellent fisheries habitat. Species usually grows in thickets and reduces understory production.	Sprouts readily from its root crown following fire or cutting; numerous wind-dispersed seeds are important in revegetating areas. Rarely browsed but trampling can impact juveniles. Channel down cutting and lowering of the water table will kill this species.
Water Birch (*Betula occidentalis*)	Found along narrow, relatively steep riparian areas in the planning area. Dense stands provide excellent thermal and hiding cover for wildlife, and enhance fisheries through bank stabilization and shading.	Aboveground plant parts are easily killed by fire, however, plants resprout from basal buds; easily established in revegetation efforts. Can be damaged by recreation and trampling.
Red Osier Dogwood (*Cornus sericea/Cornus stolonifera*)	Found along narrow, relatively steep riparian areas in the planning area. Thick, extensive root system stabilizes banks; dense flexible twigs slow floodwater during extreme events. The Rocky Mountain juniper/red-osier dogwood habitat type forms narrow bands along streams of V-shaped canyons or relatively broad stands on older alluvial terraces of floodplains of major streams and rivers (see Rocky Mountain juniper, above).	Semi-fire tolerant. Sprouts from roots, stolons, and stem bases after fire; can be killed by severe fires. Valuable winter forage for wildlife but rarely utilized by livestock; dense growth makes trampling unlikely. Species may be used for revegetation on degraded streams. Species is most common on those streams recognized for anadromous fish habitat.
Shrubby Cinquefoil (*Potentilla fruiticosa, Dasiphora floribunda*)	This species is most commonly found in moist alkaline meadows, and appears to be an indicator of relatively high water tables. Of limited value for bank stabilization since rarely found on banks, but important for structural diversity in meadows.	Susceptible to damage by fire; however, if root crowns are undamaged, individuals resprout. Shrubby cinquefoil also re-establishes from off-site seed sources. Browsed by most wildlife species and livestock.
Chokecherry (*Prunus virginiana*)	Generally found on moderately steep, narrow riparian areas, sometimes as an understory of aspen or other trees.	Well adapted to fire. Although susceptible to top-kill by fire, it resprouts prolifically from root crowns and rhizomes. Can be poisonous to livestock during drought or after freezing.

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Wood's Rose (*Rosa woodii*)	Wildlife habitat and nutritious food (rose hips) for small mammals and birds. Stabilizes seepage areas, but of limited occurrence on stream banks.	Moderately fire tolerant, usually favored by low-severity fire. Persists after low- to moderate-severity fire due to sprouting from root crowns and rhizomes. After fire, this species may germinate from on-site or off-site seed sources. Potentially an increaser under heavy use. Readily suckers and easy to establish by transplanting. Potential for use as a barrier to manage riparian areas.
Willows (*Salix bebbiana, S. boothii, S. geyeriana, S. drummondiana*)	These willow species form critical habitat for bank stabilization. Rocky banks or bottoms generally do not armor streams supporting these species; thus, the shrubs become more critical for reducing side- and head-cutting. They also provide thermal and hiding cover for wildlife and non-game habitat. *S. boothii* colonizes and stabilizes beaver dam areas, an important function in raising water tables, widening riparian areas, and creating additional bank storage.	All species tend to sprout from basal stems and root crown following top-killing fires; abundant wind-dispersed seed important in colonizing newly burned areas. Fire is relatively infrequent in riparian, wet meadow, and streamside habitats; these areas usually act as firebreaks. Streams supporting these species have the most potential for development of wide riparian areas and wet meadows, but susceptible to down cutting.
Sandbar Willow (*Salix exigua*)	Common colonizer of recently deposited gravels and sediments. This species is an excellent stabilizer in riparian areas, providing bank stabilization and sediment trapping. It appears to act as a facilitator species for establishment of other riparian vegetation. Loss of this species often results in rapid erosion of the stream channel.	Sprouts from roots after fire. Numerous wind-dispersed seeds are important in revegetating burned areas. High moisture content characteristic of streamside soils and fuels reduce fire ignition and spread. Wildlife and livestock may overuse this species. Plants are easily established through transplants and cuttings, and will vigorously spread via lateral roots.
Yellow Willow (*Salix lutea*)	Typically occurs as a pioneer or early seral species along banks of rivers or streams. It is often found with cottonwoods and other willows. In Idaho, yellow willow is generally confined to Wyoming big sagebrush and grass vegetation zones, seldom extending into the forest, and avoiding cooler mountain big sagebrush zones.	Sprouts from roots or stem base following fire. Along streamsides, high moisture contents of soils and fuels reduce the chance of fire. Numerous wind-dispersed seeds are important in revegetating areas following fire.

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Wolf's Willow, Grayleaf Willow (*Salix wolfii / S. glauca*)	Grayleaf willow communities occupy well-drained, open alpine and upper subalpine habitats with tufted hairgrass.	A fire-adapted species that sprouts from root crowns following top-kill by fire. Even old, decadent willows sprout prolifically after fire. Sprouting ability of willows is more vigorous and prolific than birches or alders. Abundant, wind-dispersed seeds are important for colonizing burned areas. Seeds are dispersed in the fall, over-winter under the snow, and germinate in spring.
Riparian Graminoid Species – restricted to only the most common and desirable species		
Water Sedge (*Carex aquatilis*)	This species requires a constant high water table. It provides excellent stabilization of seepage areas, wet meadows, and stream banks on low gradient streams the dense sod forms overhanging mats providing valuable fish cover.	Recovers quickly from low-intensity fires from underground rhizomes; aqueous habitat further protects roots and rhizomes, however, better-drained areas are more susceptible to fires, especially during dry summers. Colonizes burned areas by seeds and rhizomes.
Nebraska Sedge (*Carex nebrascensis*)	One of the most common of the coarse sedges, requiring less moisture than *C. rostrata* or *C. aquatilis*; thick rhizomes provide excellent bank stabilization and bank overhangs. Highly palatable to wildlife and livestock.	May be damaged by severe fires, depending upon soil moisture conditions during and following fire.
Beaked Sedge (*Carex rostrata*)	Another common coarse sedge that occurs on moister sites than *C. nebrascensis*, often in seeps and riparian areas. Thick, dense rhizomes provide bank and soil stabilization. Overhanging mats create excellent fisheries habitat but are also susceptible to trampling and mass-wasting. Species forms thick organic layers and may contribute to water-holding capacity in banks.	Beaked sedge has deeply buried rhizomes that usually survive all but the most severe fires.
Tufted Hairgrass (*Deschampsia caespitosa*)	Common in moist meadows and as a colonizer of gravel bars; may also replace *Carex* spp. as the water table drops, and be replaced by the exotic sod-former, *Poa pratensis* (Kentucky bluegrass).	Generally survives all but most severe fires. Usually sprouts from root crowns after fire. Tufts formed by the leaves protect basal buds from fire. After fire the species regenerates from on-site seed.

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Baltic Rush (*Juncus balticus*)	This species can tolerate a lowered water table and heavy trampling. Its long, tangled roots provide good bank stabilization. The species does not form overhanging banks. It is generally an increaser and sometimes replaces *Carex*. It has relatively low productivity and does not develop organic deposits.	Sprouts from extensive rhizomes after fire. Helps to stabilize banks but it does not contribute to other riparian vegetation functions (overhanging banks, shading). Can be found on deeply incised channels (up to 12 feet above the water table); thus, roots can apparently (grow to) remain in contact with the water table. Such plants, however, have little vigor and provide little bank stabilization.
Kentucky Bluegrass (*Poa pratensis*)	Common understory dominant of low- to middle-elevation riparian communities, typically gently sloping stream terraces with a widely spaced overstory of cottonwood, water birch, conifers, or willows (*Salix geyeriana, S. lutea*, *S. exigua*). Dominates low- and middle-elevation riparian meadows on broad floodplains and elevated stream terraces.	Rhizomes survive and initiate growth after aboveground shoots are burned. Although the plant survives because of soil-insulated rhizomes, postfire plant vigor and density are greatly affected by phenological stage at time of burning. Seedling establishment is unimportant in immediate postfire recovery. However, burning may enhance seed germination during a second postfire growing season.

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